

Remarks

Reconsideration of this Application is respectfully requested.

Upon entry of the foregoing amendments, claims 1-6 and 11-16 are pending in the application, with claims 1 and 11 being the independent claims. Claims 7-10 are sought to be cancelled without prejudice to or disclaimer of the subject matter therein. Claims 1 and 11 are sought to be amended. Support for the amendment to claims 1 and 11 can be found throughout the specification, for example, at page 29, lines 16-20. It is believed that the amendments presented above will place the application in condition for allowance and/or in better form for appeal. *See* 37 C.F.R. § 1.116(a). It is respectfully requested that the amendments after final Office Action be entered and considered.

Based on the above amendment and the following remarks, Applicants respectfully request that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn.

I. Telephonic Interview

Applicants wish to thank the Examiner for the courtesy of a telephonic interview with the undersigned and Judith Kim on October 6, 2004. During the interview, the rejection under 35 U.S.C. § 112, first paragraph was discussed. Possible claim amendments were also discussed.

II. Claim Rejections Under 35 U.S.C. § 112, First Paragraph

Claims 1-5 and 11-15 were rejected under 35 U.S.C. § 112, first paragraph, as allegedly containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. *See* Office Action, page 2. Applicants respectfully traverse this rejection.

The rejection is based on the Examiner's contention that:

the claims are genus claims that encompass any substrate for use in the recited method for identifying compounds that inhibit the proteolytic activity of separase. The scope of the claim includes many substrates with widely differing structural, chemical, and physical characteristics, and the genus is highly variable because a significant number of structural differences between genus members is permitted.

Office Action, page 2. To satisfy the written description requirement of 35 U.S.C. § 112, first paragraph, an applicant must convey with reasonable clarity to those skilled in the art that, as of the effective filing date, the applicant was in possession of the invention. *See Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1560, 19 USPQ2d 1111, 1117 (Fed. Cir. 1991). As explained below, a person of ordinary skill in the art would have understood that, as of the effective filing date of the present application, Applicants were in possession of the full scope of the methods encompassed by the present claims.

The currently presented claims are directed to methods for identifying compounds that inhibit sister chromatid separation. According to the claims, an active separase is

incubated in the presence of a separase substrate with a test compound. The separase substrate is specified as being a peptide comprising an amino acid sequence EXXR, wherein X is any amino acid, and the separase substrate is capable of being cleaved by the active separase. A person of ordinary skill in the art would recognize that Applicants were in possession of the full scope of the methods encompassed by the claims, including methods that involve the use of *any* separase substrate having the recited structural and functional properties.

The specification sets forth several exemplary separase substrates that can be used in the practice of the methods of the invention. For example, the specification describes the use of the separase substrate SCC1 in *in vitro* separase cleavage reactions. *See, e.g.,* Examples 1-4 and 7 (pages 18-25 and 27-28). It is also noted that fragments of SCC1 containing the separase cleavage site can serve as separase substrates. *See* specification at page 7, lines 9-13. The specification also notes that the separase molecule itself is a separase substrate (*i.e.,* separase cleavage occurs autocatalytically). *See* specification at page 5, lines 15-17. The use of separase as a separase substrate is demonstrated in Example 6 (pages 26-27). Moreover, four different synthetic separase substrates are described in Example 9 (page 30): SFEILR-AMC, SFEILRG-AMC, EWELLR-AMC and DREIMR-AMC. Additional separase substrates were well known in the art as of the effective filing date of the present application. *See* Applicants' Amendment and Reply Under 37 C.F.R. § 1.111, filed on April 19, 2004, pages 10-12, and the documents cited therein.

Importantly, the specification notes that "separase cleavage sites in all known organisms cleave after the sequence EXXR." *See* specification at page 29, lines 16-17. The

specification identifies the sequences SFEILR¹⁵⁰⁶ and EWELLR¹⁵³⁵ as separase cleavage sites in human separase. *See* specification at page 29, lines 19-20. In addition, the specification identifies the sequence SVEQGR as the separase cleavage site of the budding yeast SCC1. *See* specification at page 21, lines 8-10. Given these known separase cleavage site sequences, a person of ordinary skill in the art, using routine molecular biological techniques, could easily design and express an almost infinite array of separase substrates. A person of ordinary skill in the art, in view of the present specification, would recognize that any polypeptide sequence containing these cleavage site sequences would serve as an adequate separase substrate for use in the present invention. *See, e.g.,* specification at page 7, lines 9-13 (describing the use of SCC1 fragments containing a separase cleavage site as separase substrates for use in the methods of the invention).

According to the USPTO's guidelines for determining adequacy of written description, the written description requirement for a claimed genus may be satisfied through sufficient description of a representative number of species. *See* M.P.E.P. § 2163. The USPTO's guidelines further note that "[w]hat constitutes a 'representative number' is an inverse function of the skill and knowledge in the art." *See Id.* The fact that numerous separase substrates were known and characterized as of the effective filing date of the present application indicates that the level of skill and knowledge in the art was very high. Moreover, additional separase substrates could have been easily constructed based on the particular substrate sequences disclosed in the specification using routine molecular biological techniques. Thus, the separase substrates described in the specification (*e.g.,*

SCC1, SCC1 fragments, separase, SFEILR-AMC, SFEILRG-AMC, EWELLR-AMC and DREIMR-AMC) would clearly be regarded as a representative number of species.

The Examiner, in explaining the rejection, stated that the separase substrates included in the methods of the present invention have "widely differing structural, chemical, and physical characteristics." *See* Office Action, page 2. Applicants first note that no support has been provided for this assertion. In order to establish a *prima facie* case of lack of written description, the examiner has the initial burden of presenting by a preponderance of evidence why a person of ordinary skill in the art would not recognize in an Applicant's disclosure a description of the invention defined by the claims. *See In re Wertheim*, 541 F.2d 257, 263, 191 USPQ 90, 97 (CCPA 1976); *see also* M.P.E.P. § 2163.04. No such evidence has been provided here.

In addition, Applicants respectfully assert that the Examiner's comments regarding the "widely differing structural, chemical, and physical characteristics" of separase substrates is incorrect. As indicated in the specification, all separase substrates are structurally and functionally related. *See, e.g.*, specification at page 29, lines 16-20. The important functional characteristic shared by all separase substrates is that, by definition, they are cleaved by separase. This functional characteristic is directly correlated with the common structural characteristic shared by all separase substrates, namely the cleavage sequence EXXR. These structural and functional attributes of separase substrates are specified in currently presented independent claim 1.

The written description requirement for a claimed genus can be satisfied by, *inter alia*, disclosure of functional characteristics coupled with a known or disclosed correlation

between function and structure. *See Regents of the University of California v. Eli Lilly*, 43 USPQ2d 1398, 1406 (Fed. Cir. 1997). Thus, in the context of separase substrates, the written description requirement is satisfied by the disclosure of the function of the separase substrates (the ability to be cleaved by separase) and the known correlation between this function and their structure (the cleavage sequence EXXR).

In view of: (a) the large number of separase substrates that are disclosed in the specification and that were known in the art; (b) the fact that all separase substrates share the same structural attributes which allow these polypeptides to be cleaved by separase; and (c) the ability of persons of ordinary skill in the art to easily construct additional separase substrates based on the substrates disclosed in the specification, a person of ordinary skill in the art would conclude that Applicants were in possession of the full scope of methods encompassed by the present claims. Applicants therefore respectfully request that the rejection under 35 U.S.C. § 112, first paragraph, be reconsidered and withdrawn.

III. Claim Objections

Claims 6 and 16 were objected to as being dependent upon a rejected base claim. As noted above, Applicants believe that the rejection of claims 1-5 and 11-15 was in error. In view of the arguments set forth above, Applicants respectfully request that the objection to claims 6 and 16 be reconsidered and withdrawn.

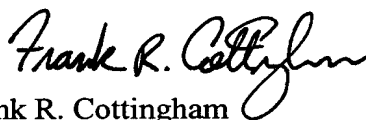
Conclusion

All of the stated grounds of objections and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

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